

### Abstract

The present invention is directed to diagnostic tools and therapies using antibodies to *Bacillus anthracis*. Specifically, the present invention is directed to a *B. anthracis*-specific monoclonal antibody that binds to the EA1 antigen (corresponding to the *eag* gene) of the S-layer (surface layer) of spores. This monoclonal antibody may be used in a variety of applications, including to specifically detect and diagnose *B. anthracis*. Preferably, antibodies are monoclonal and bind to a surface protein, such as EA1 protein, on the spores of *B. anthracis*, and not to spores of either *B. cereus* or *B. thuringiensis*. Antibodies can be incorporated into detection kits using, for example, colloidal particle based lateral flow detection system. Such detection kits can distinguish anthrax spores from non-pathogenic varieties of spores. In addition, the invention is directed to *B. anthracis* EA1 antigen and pharmaceuticals such as vaccines that can be used as therapeutics and to develop improved antibodies and detection methods.